FIG. 1

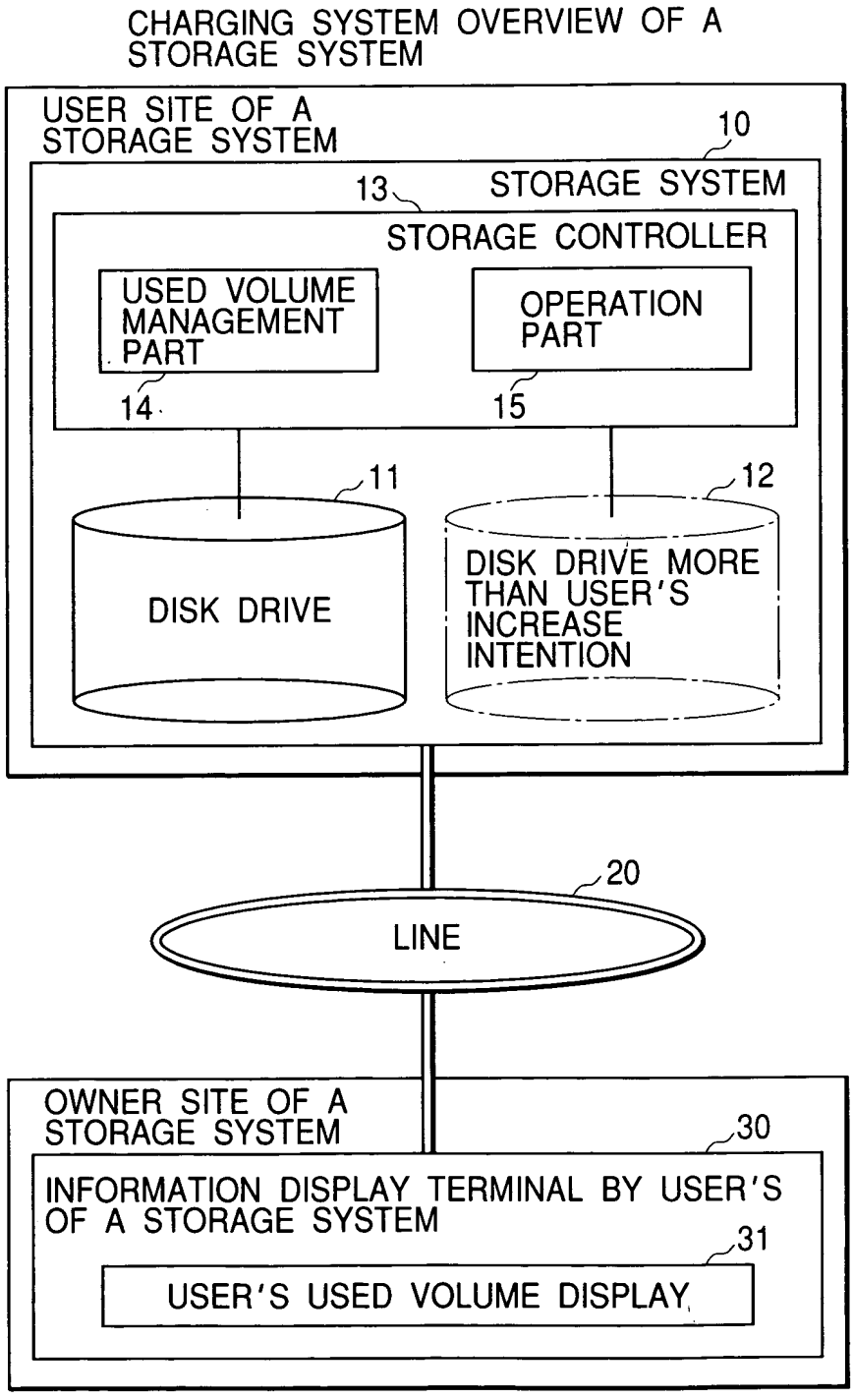
CHARGING SYSTEM OVERVIEW OF A STORAGE SYSTEM
USER SITE OF A STORAGE SYSTEM
10
STORAGE SYSTEM
13
STORAGE CONTROLLER
USED VOLUME MANAGEMENT PART
OPERATION PART
14
15
11
12
DISK DRIVE
DISK DRIVE MORE THAN USER'S INCREASE INTENTION
20
LINE
OWNER SITE OF A STORAGE SYSTEM
30
INFORMATION DISPLAY TERMINAL BY USER'S OF A STORAGE SYSTEM
31
USER'S USED VOLUME DISPLAY

FIG. 2

MANAGEMENT TABLE OF A DISK CONTROL UNIT OF A STORAGE SYSTEM

ON-DEMAND VOLUME	ON-DEMAND FLAG ATTRIBUTE (SET/RESET)	RESET TIME (DATE AND TIME)
xxGB	RESET	yymmddhhmmss
xxGB	RESET	yymmddhhmmss
xxGB	SET	
xxGB	SET	
⋮	⋮	⋮
xxGB	SET	

FIG. 3

INFORMATION FLOW OF A STORAGE SYSTEM AND AN INFORMATION DISPLAY TERMINAL AT RESET OF AN ON-DEMAND FLAG

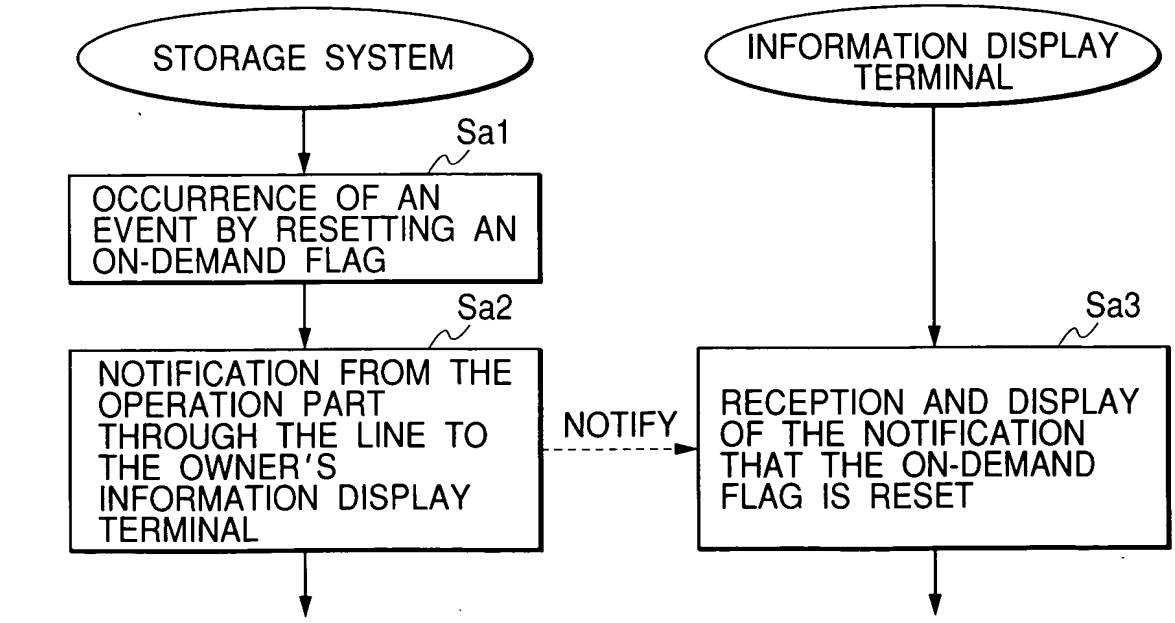

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FIG. 4

INFORMATION FLOW OF A STORAGE SYSTEM AND AN INFORMATION DISPLAY TERMINAL AT CONFIRMATION (INQUIRING) OF INFORMATION

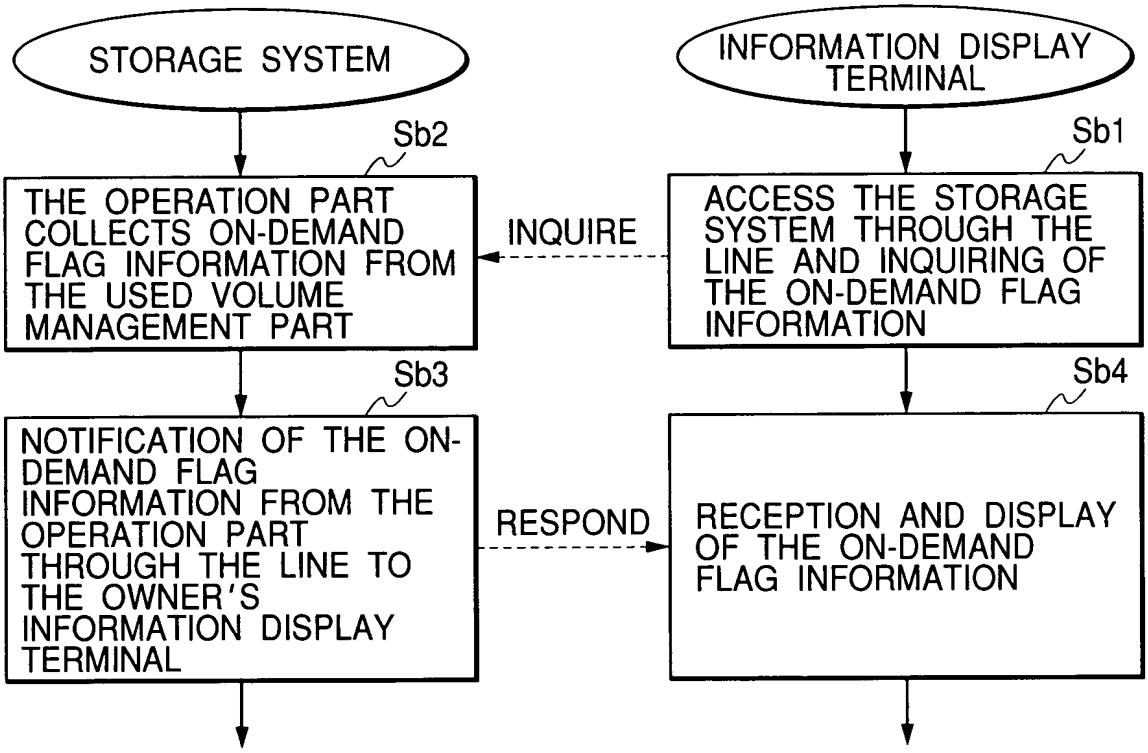


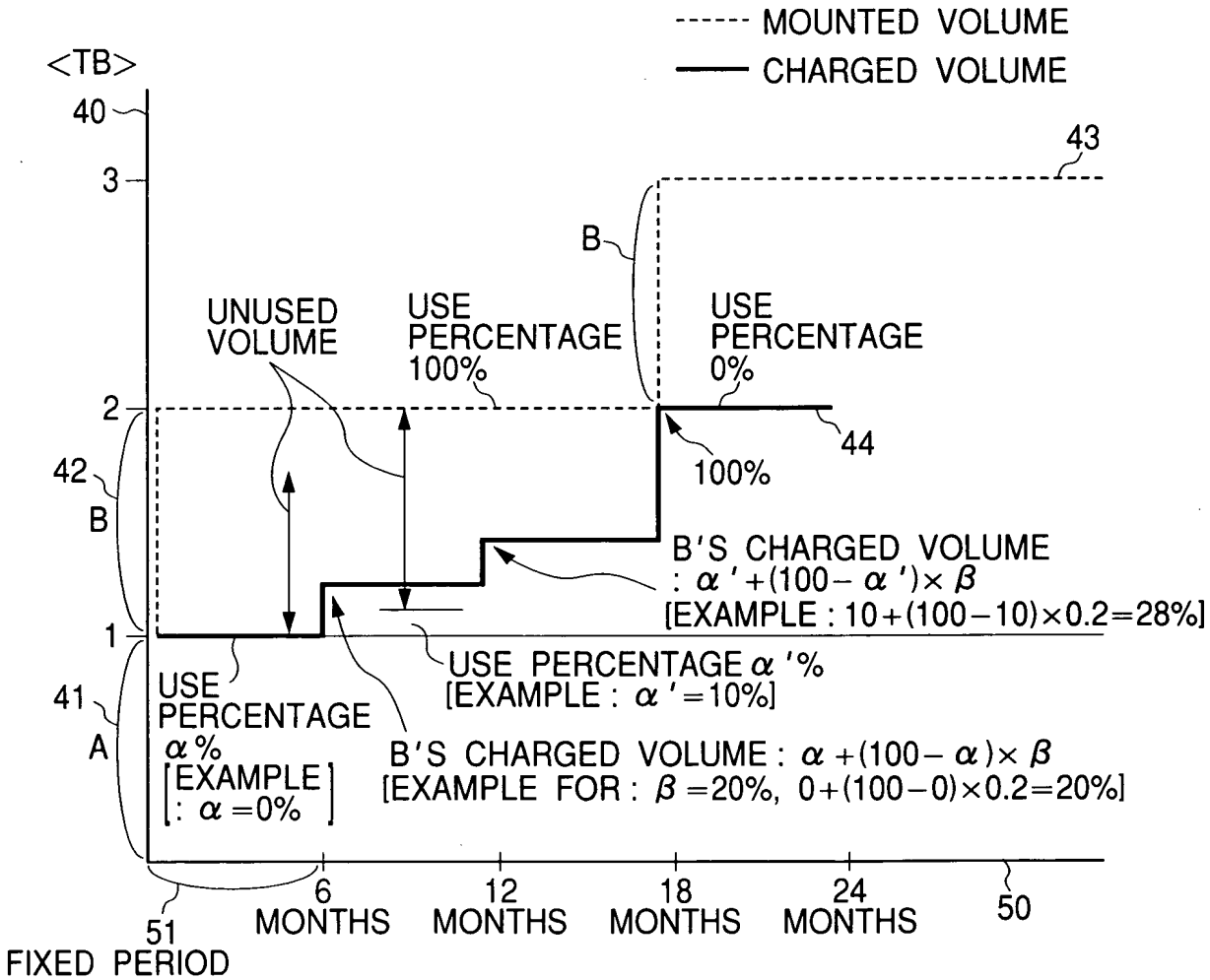
FIG. 5

EXAMPLE OF AN INFORMATION MANAGEMENT TABLE BY USER'S OF A STORAGE SYSTEM

	USER A	USER B	USER C
USER ID	xxxxxxx	xxxxxxx	xxxxxxx
USED VOLUME	xxGB	xxGB	xxGB
ADDED VOLUME	xxGB	xxGB	xxGB
USE PERIOD	x YEAR/x MONTH/x DAY TO x YEAR/x MONTH/x DAY	x YEAR/x MONTH/x DAY TO x YEAR/x MONTH/x DAY	x YEAR/x MONTH/x DAY TO x YEAR/x MONTH/x DAY
USE STARTING DATE	x YEAR/x MONTH/x DAY	x YEAR/x MONTH/x DAY	x YEAR/x MONTH/x DAY
ALLOCATED VOLUME	VOL. 1, VOL. 2	VOL. 3, VOL. 4	VOL. 5, VOL. 6
USE UNIT COST	x¥/MONTH	x¥/MONTH	x¥/MONTH

FIG. 6

CHARGED VOLUME TRANSITION DIAGRAM TO THE DISK VOLUME OF A STORAGE SYSTEM



DECISION OF A "USED VOLUME" AND AN "UNUSED VOLUME" AFTER 6 MONTHS ELAPSE
A TOTAL CHARGED VOLUME FOR THE NEXT 6 MONTHS IS A+B USED VOLUME+
(B'S UNUSED VOLUME×CHARGING PERCENTAGE β%)

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FIG. 7

FLOWCHART OF A CHARGING METHOD TO THE DISK VOLUME OF A STORAGE SYSTEM

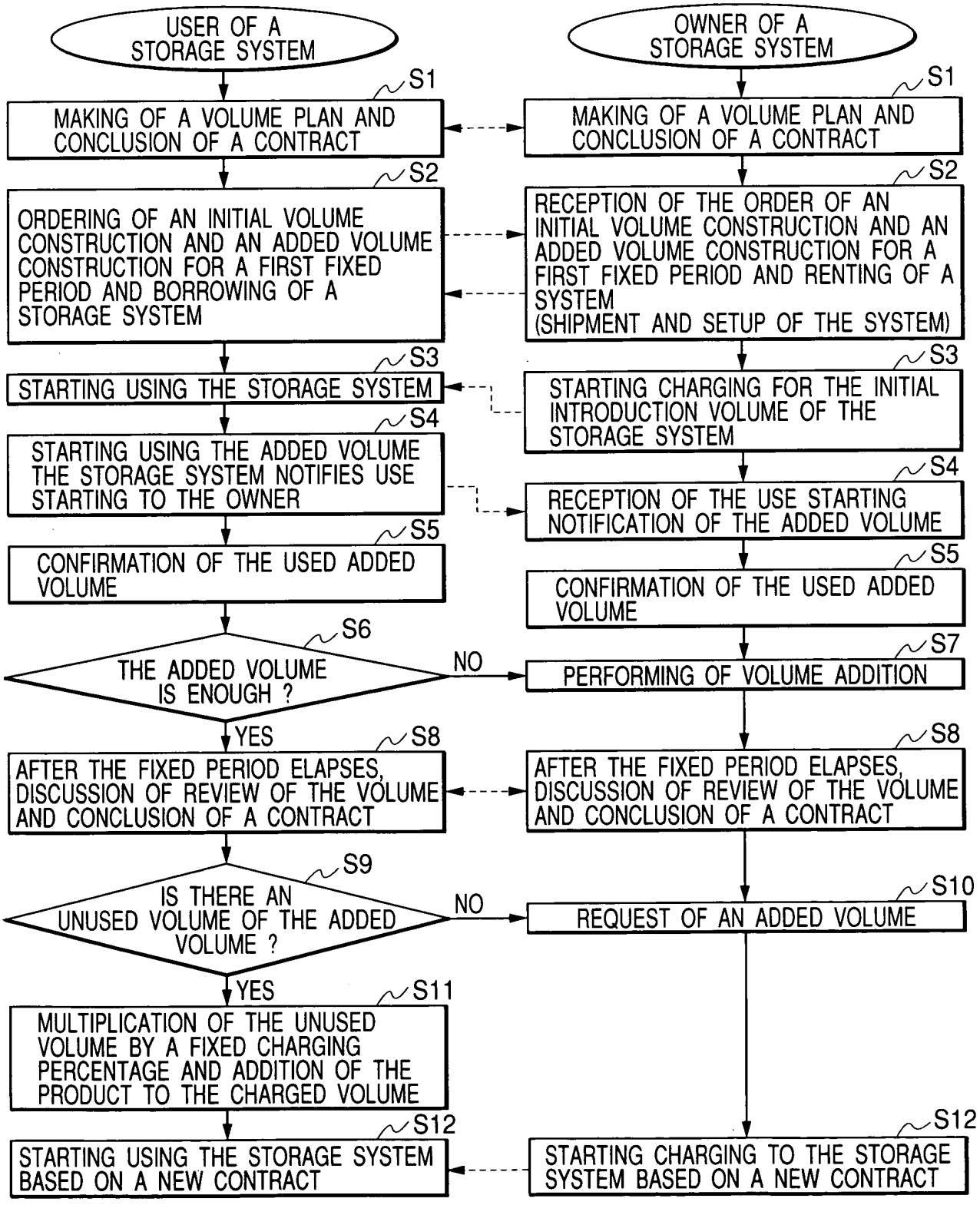

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FIG. 8

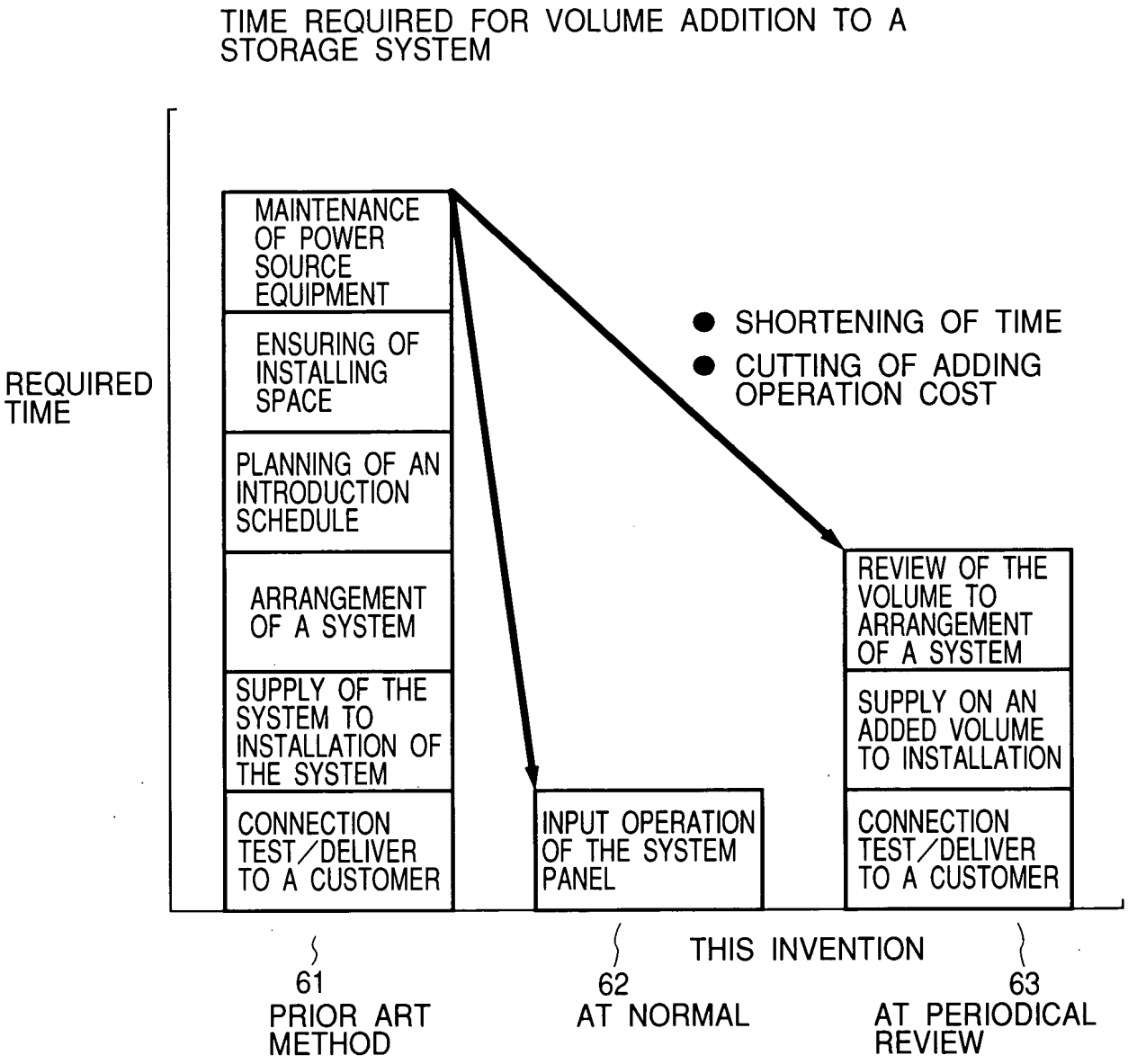
TIME REQUIRED FOR VOLUME ADDITION TO A STORAGE SYSTEM
REQUIRED TIME
MAINTENANCE OF POWER SOURCE EQUIPMENT
ENSURING OF INSTALLING SPACE
PLANNING OF AN INTRODUCTION SCHEDULE
ARRANGEMENT OF A SYSTEM
SUPPLY OF THE SYSTEM TO INSTALLATION OF THE SYSTEM
CONNECTION TEST/DELIVER TO A CUSTOMER
INPUT OPERATION OF THE SYSTEM PANEL
REVIEW OF THE VOLUME TO ARRANGEMENT OF A SYSTEM
SUPPLY ON AN ADDED VOLUME TO INSTALLATION
CONNECTION TEST/DELIVER TO A CUSTOMER
● SHORTENING OF TIME
● CUTTING OF ADDING OPERATION COST
THIS INVENTION
61
PRIOR ART METHOD
62
AT NORMAL
63
AT PERIODICAL REVIEW

FIG. 9

INITIAL INVESTED VOLUMES TO A STORAGE SYSTEM

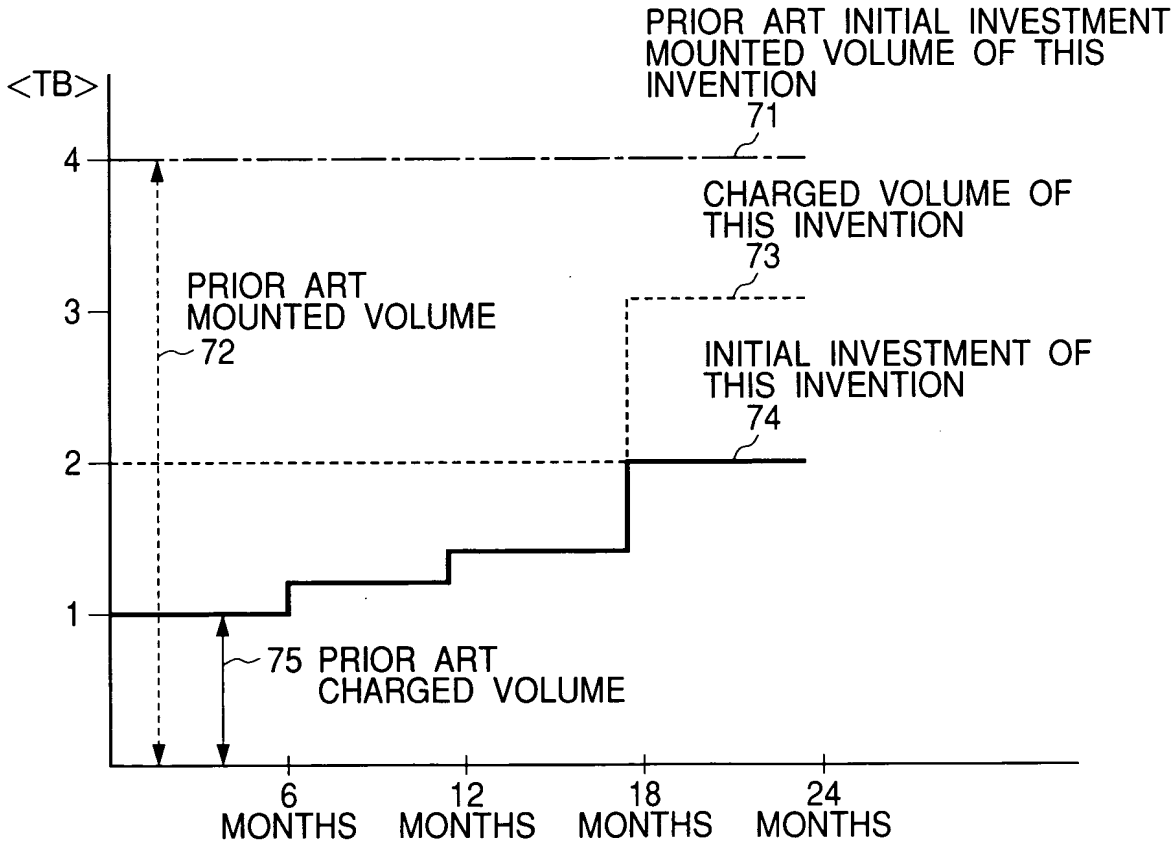

FIG. 10

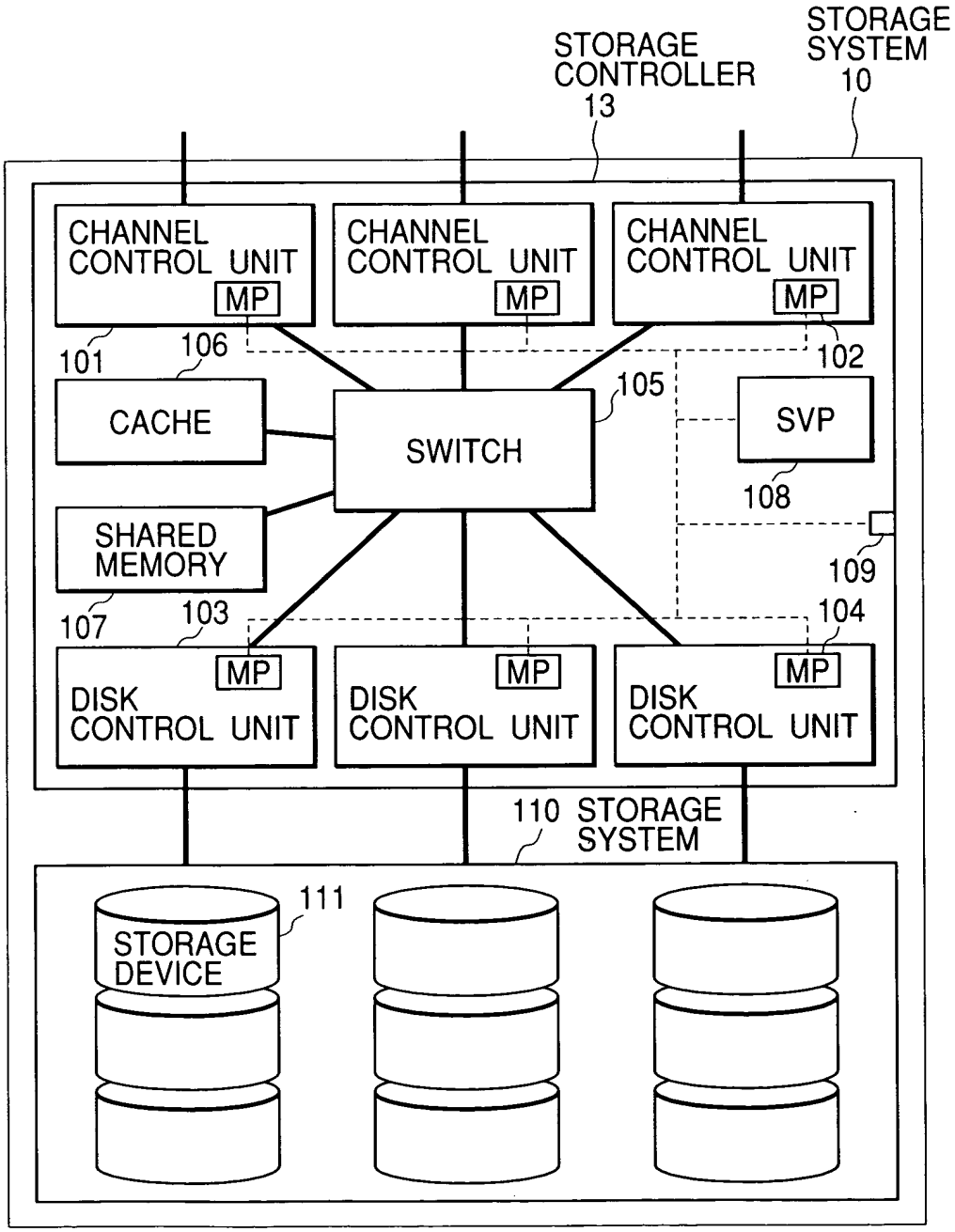
STORAGE CONTROLLER
13
STORAGE SYSTEM
10
CHANNEL CONTROL UNIT
MP
CHANNEL CONTROL UNIT
MP
CHANNEL CONTROL UNIT
MP
101
106
102
CACHE
SWITCH
105
SVP
108
SHARED MEMORY
109
107
103
104
DISK CONTROL UNIT
MP
DISK CONTROL UNIT
MP
DISK CONTROL UNIT
MP
110 STORAGE SYSTEM
111
STORAGE DEVICE

FIG. 11

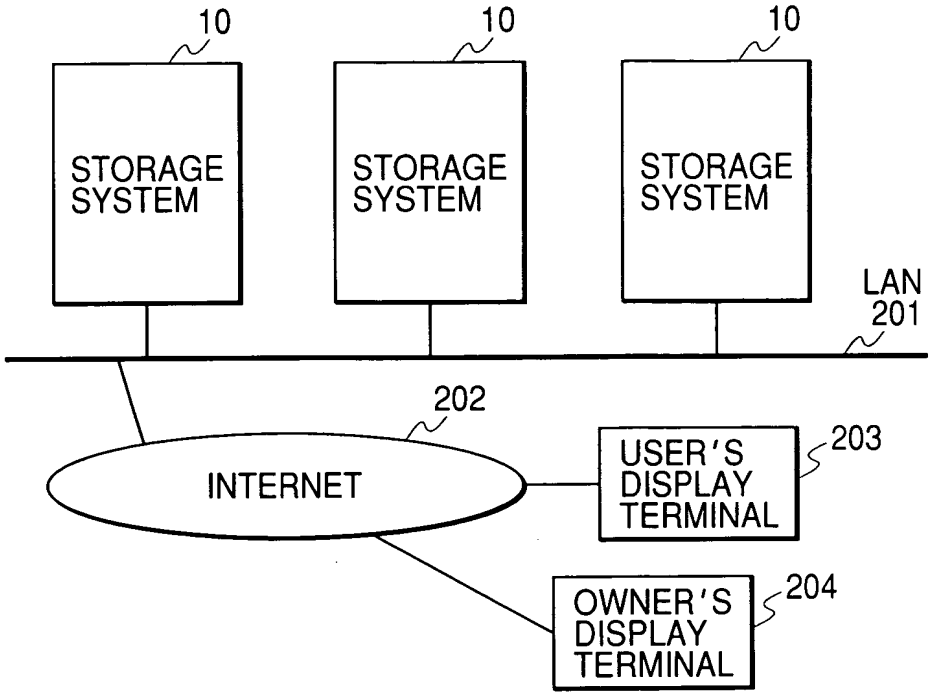

FIG. 12

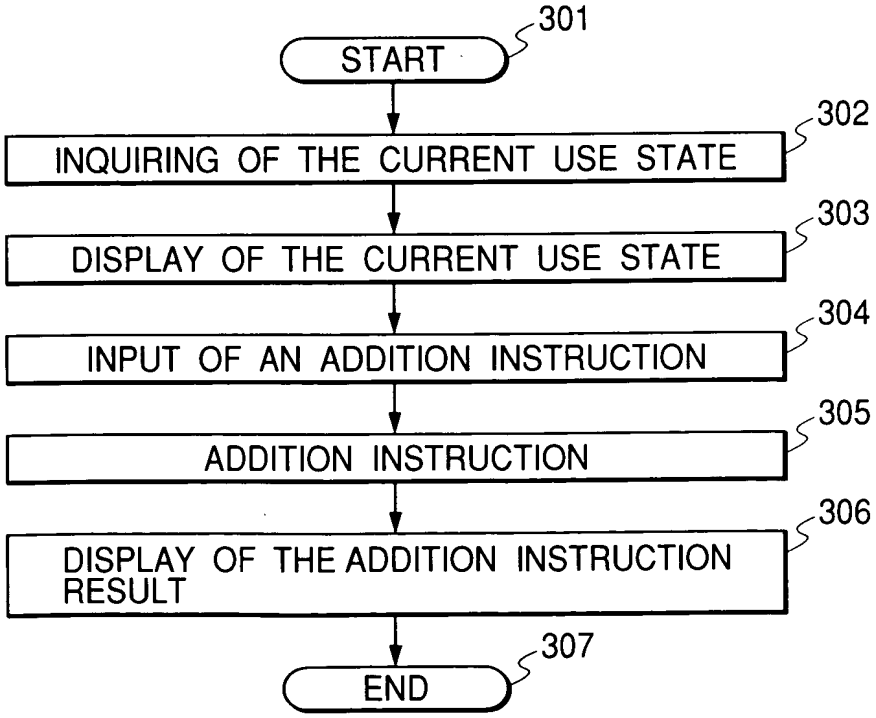

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FIG. 13

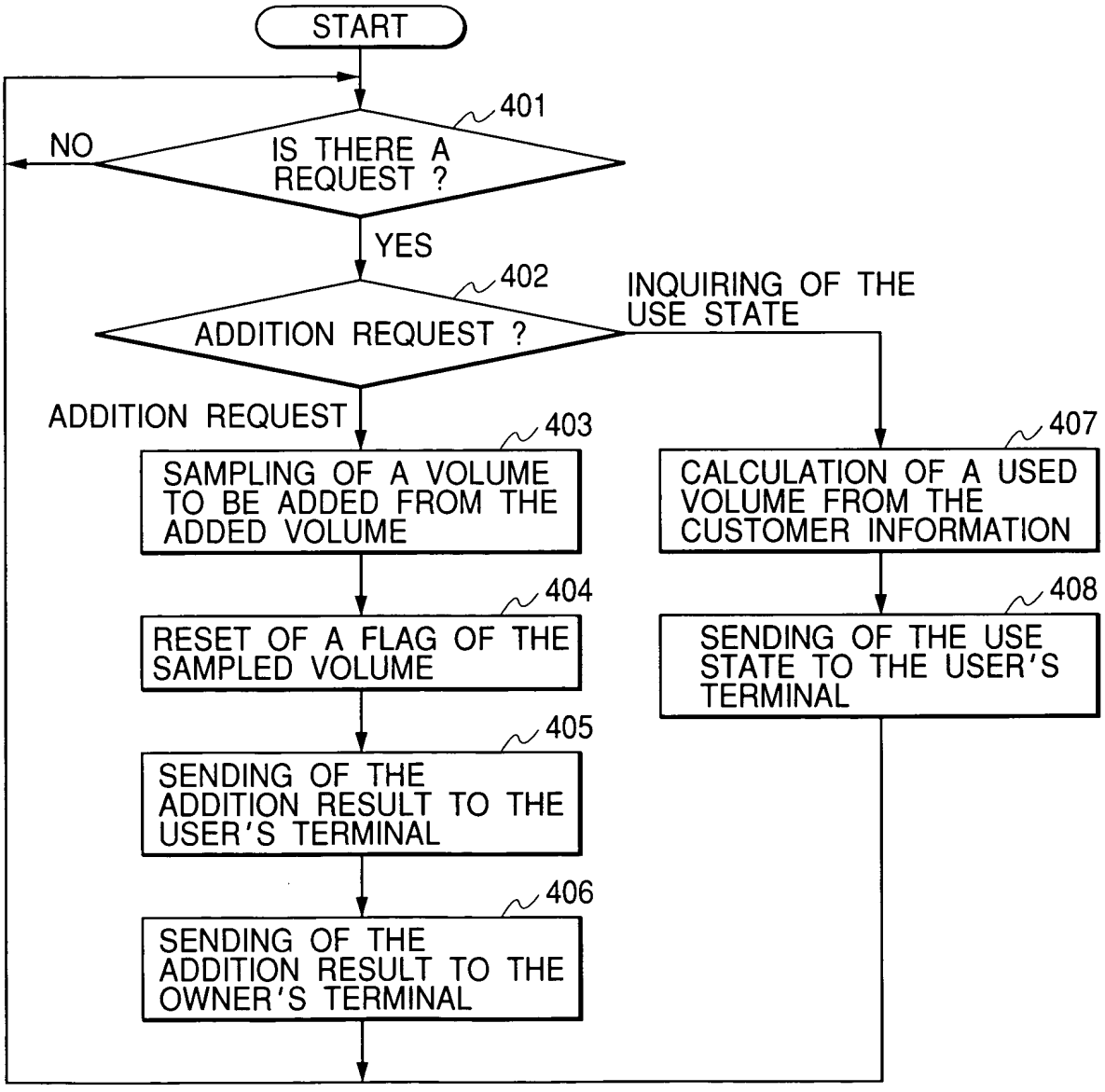

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FIG. 14

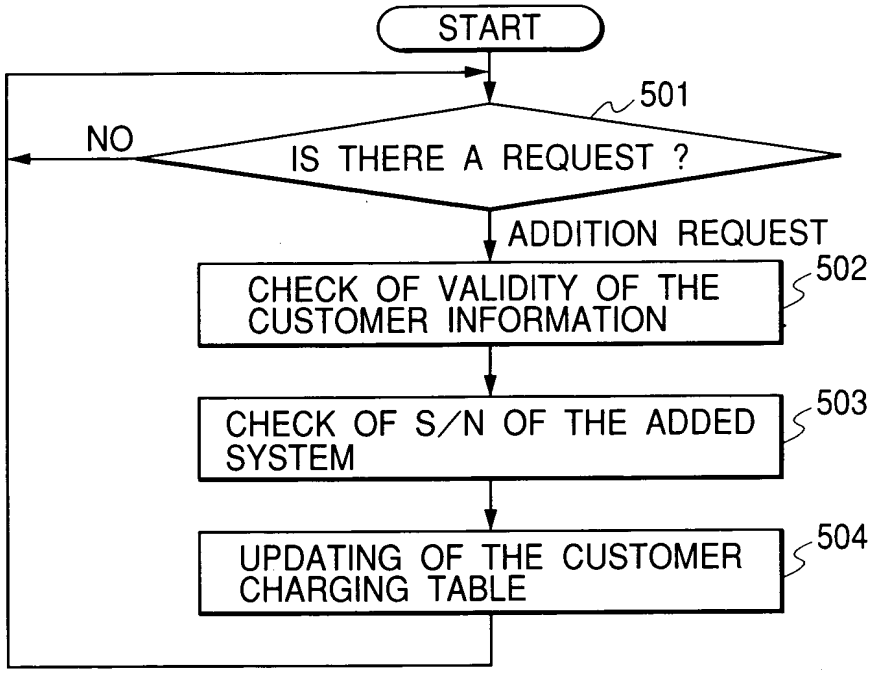

START
501
NO
IS THERE A REQUEST ?
ADDITION REQUEST
CHECK OF VALIDITY OF THE CUSTOMER INFORMATION
502
CHECK OF S/N OF THE ADDED SYSTEM
503
UPDATING OF THE CUSTOMER CHARGING TABLE
504

FIG. 15

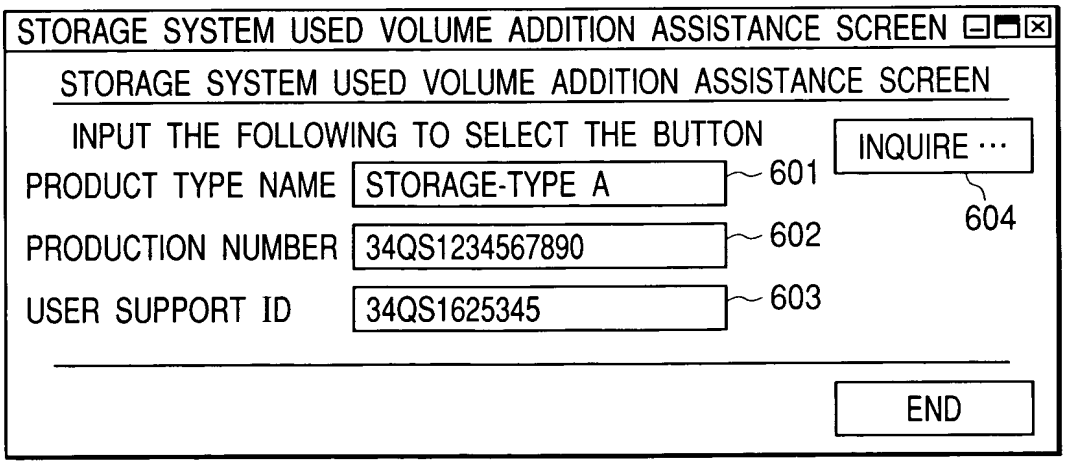

STORAGE SYSTEM USED VOLUME ADDITION ASSISTANCE SCREEN
STORAGE SYSTEM USED VOLUME ADDITION ASSISTANCE SCREEN
INPUT THE FOLLOWING TO SELECT THE BUTTON
INQUIRE ···
604
PRODUCT TYPE NAME
STORAGE-TYPE A
601
PRODUCTION NUMBER
34QS1234567890
602
USER SUPPORT ID
34QS1625345
603
END

FIG. 16

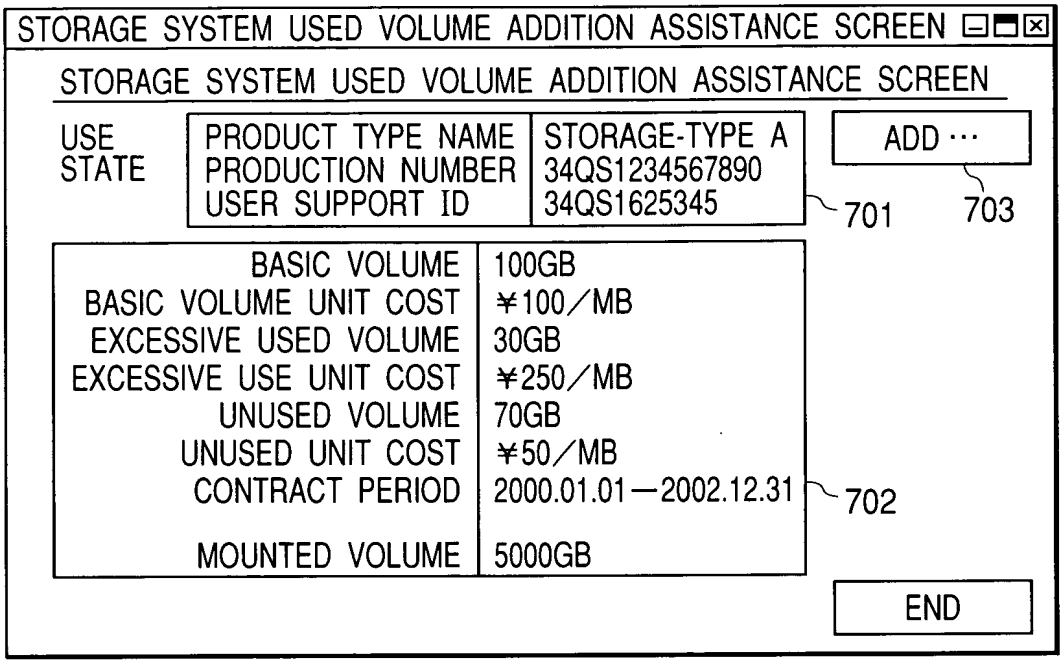
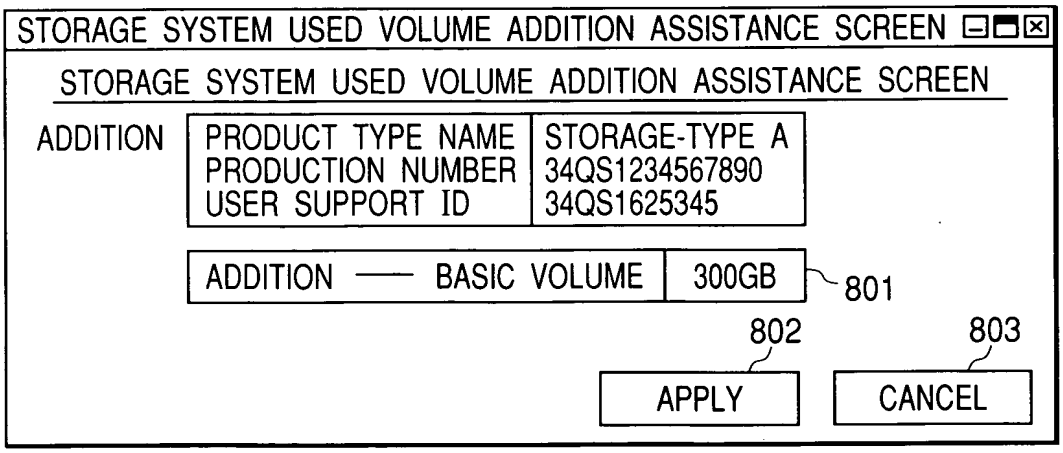


FIG. 17



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